



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/586,941

05/22/2007

Andrew Stock

SPRU-0012

5389

23377 7590 10/16/2009
WOODCOCK WASHBURN LLP
CIRA CENTRE, 12TH FLOOR
2929 ARCH STREET
PHILADELPHIA, PA 19104-2891

EXAMINER

MARTIN, MATTHEW T

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

10/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,941	Applicant(s) STOCK, ANDREW	
	Examiner MATTHEW T. MARTIN	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/26/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status of Claims

1. Claims 1-47 are pending and are examined below.

Claim Rejections - 35 USC § 112

2. Claims 35 and 45 provide for the use of a solar panel, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

3. Claims 35 and 45 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1795

5. Claims 1, 2, 4-7, 11-15, 20, 22, 24-26, 28, 32, 33, 35-37, 41-43 and 45-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Gonsiorawski, U.S. Patent No. 7,238,878.

Regarding Claims 1 and 22, Gonsiorawski teaches a photovoltaic module of a combination used for the conversion of solar energy, which can be considered a solar panel, comprising:

An array of solar cells (8). Gonsiorawski shows each cell having a front and a back (see fig. 4), and the front, light receiving surface of each individual cell is capable of converting at least a portion of solar light incident into electrical energy (see column 1, lines 5-15). Furthermore, Gonsiorawski both teaches (see abstract) and shows (see fig. 4) spacings between the individual solar cells (8; see fig. 4 and column 1, lines 25-35);

The internal reflector facet (26) is interpreted by the examiner as an element comprising a visually distinguishable feature, because the present specification defines one embodiment of the element as a reflector (see paragraph 14). Additionally, Gonsiorawski teaches that using an encapsulant to protect the solar cells. The present application also identifies an encapsulant as one of the potential embodiments for the element (see paragraphs 15 and 16), so the claims of the present application are also interpreted such that an encapsulant is considered a visually distinguishing feature. Furthermore, neither the reflector nor the encapsulant taught by Gonsiorawski prevent solar light incident on the panel front from being incident on the array.

Regarding Claim 2, Gonsiorawski teaches that all light incidents on the panel front will also be incident on the cell, because Gonsiorawski teaches that the panes front is transparent, and therefore would not obscure any light from the cell (see fig. 4 and abstract).

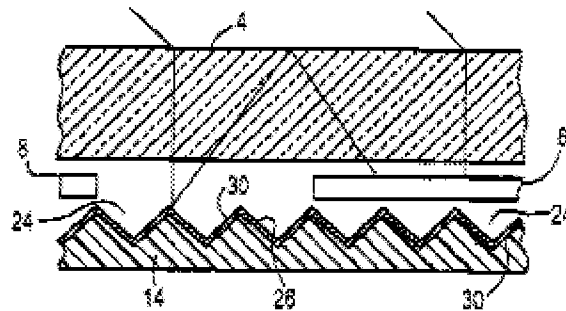


FIG. 4

Regarding Claims 4 and 5, Gonsiorawski teaches a transparent encapsulant (see abstract and column 5, lines 45-50).

Regarding Claims 6 and 7, Gonsiorawski teaches transparent support panels (see column 5, lines 40-55). The two layers (6) of transparent encapsulant are interpreted to be support panels, as they have a function of supporting the cell within the assembly.

Regarding Claims 11-14, Gonsiorawski teaches an encapsulant, a visually distinguishable element taught by applicant, in the space between the front and back cover (see fig. 4 and column 5, lines 45-50). This includes the area between individual solar cells of the array.

Regarding Claim 15, Gonsiorawski teaches a module with a panel front (4; see fig. 4). Additionally, it is examiner's position that the panel front is visually

Art Unit: 1795

distinguishable, because one would readily be able to distinguish the panel front from the rest of the cell, while also being able to transmit visual light to the cell.

Regarding Claim 20, Gonsiorawski teaches a solar panel comprising an array of solar cells. Each of Gonsiorawski's solar cells have an front and a back (see fig. 4) and the front portion is capable of converting light into electrical energy, and there is a spacing between each cells. Furthermore, the pattern of solar cells can be considered visually distinguishable, because Gonsiorawski teaches its cells disposed in a grid pattern (see fig. 6) and the present specification includes a pattern as a visually distinguishable feature.

Regarding Claim 24 and 29, Gonsiorawski teaches a method of making a photovoltaic device, comprising:

Placing an array of solar cells (8). Gonsiorawski shows each cell having a front and a back (see fig. 1), and the front, light receiving surface of each individual cell is capable of converting at least a portion of solar light incident into electrical energy (). Furthermore, Gonsiorawski both teaches (see abstract) and shows (see fig. 1) spacings between the individual solar cells (8);

Including an element comprising a visually distinguishable feature such that the element comprising the feature is located between the panel back and the panel front. The internal reflector (26) is interpreted by the examiner as an element comprising a visually distinguishable feature, because the present specification defines one embodiment of the element as a reflector (see paragraph 14). Additionally, Gonsiorawski teaches that using an encapsulant to protect the solar cells. The present

Art Unit: 1795

application also identifies an encapsulant as one of the potential embodiments for the element (see paragraphs 15 and 16), so the claims of the present application are also interpreted such that an encapsulant is considered a visually distinguishing feature. Furthermore, neither the reflector nor the encapsulant taught by Gonsiorawski prevent solar light incident on the panel front from being incident on the array.

Regarding Claim 25, Gonsiorawski teaches a process of making a solar panel comprising arranging a plurality of solar cells in an array. Each of Gonsiorawski's solar cells have a front and a back (see fig. 4) and the front portion is capable of converting light into electrical energy, and there is a spacing between each individual cell. Furthermore, the pattern of solar cells can be considered visually distinguishable, because Gonsiorawski teaches its cells disposed in a grid pattern and the present specification includes a pattern as a visually distinguishable feature.

Regarding Claim 26, Gonsiorawski teaches locating a reflector (26) capable of reflecting solar light (see fig. 4) towards solar cells in the array (see fig. 4).

Regarding Claims 28 and 41, Gonsiorawski teaches a solar cell module with the structural features discussed above. Claims 28 and 41 are product by process limitations

The cited prior art teaches all of the positively recited structure of the claimed apparatus or product. The determination of patentability is based upon the apparatus structure itself. The patentability of a product or apparatus does not depend on its method of production or formation. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even

Art Unit: 1795

though the prior product was made by a different process (see MPEP §§ 2114 and 2173.05(g)).

Regarding Claims 32-34, 37, 42, 43 and 47, Gonsiorawski teaches a solar cell and an array of solar cells having a front and a back (see fig. 4 and column 2, lines 25-35). Additionally, Gonsiorawski teaches that light incident on the front of the solar cells can be absorbed and converted into electrical energy.

Furthermore, Claims 32-34, 42-44 and 47 are directed to the intended use of the claimed invention. The cited prior art teaches all of the positively recited structure of the claimed apparatus. A statement of intended use in an apparatus claim fails to distinguish over a prior art apparatus (see MPEP 2113).

Regarding Claims 35 and 45, Claims 35 and 45 are rejected under 35 U.S.C. 101 and 35 U.S.C. 112 as use claims as discussed above. Additionally, however, Gonsiorawski teaches using the solar cell module taught to convert light into electrical energy (see column 1, lines 25-45).

Regarding Claims 36 and 46, Gonsiorawski teaches a method of using a solar panel, including all of the limitations of Claim 1 as discussed above using the solar module to convert solar energy into electrical energy by exposing the panel to light.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsiorawski as applied above in view of Folino, U.S. Patent No. 4,454,371.

Regarding Claim 3, Gonsiorawski teaches a solar panel as discussed above. Gonsiorawski does not teach a removable visually distinguishable element.

Folino teaches a solar energy panel system with a transparent, removable cover (see column 4, lines 50-65). The cover taught by Folino satisfies the limitation, visually distinguishable, because one would be able to distinguish the cover from the solar cells themselves, and applicant identifies a cover as a visually distinguishable element in the present specification (see paragraphs 11 and 190).

Therefore, it would be obvious to one of ordinary skill in the art to modify one of the visually distinguishable elements taught by Gonsiorawski by making the cover removable as taught by Folino because a removable cover provides high transmittance to light while allowing for cell maintenance (see column 4, lines 50-65).

Art Unit: 1795

10. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsiorawski in view of Evans, Jr., U.S. Patent No. 4,341,918.

Regarding Claims 8 and 9, Gonsiorawski teaches a solar cell array as discussed above, including a reflector that is capable of reflecting light onto the cell, including the backs (see fig. 4).

Gonsiorawski does not teach using cells that can absorb light on both the front and back, although Gonsiorawski does teach that many different cell designs can be used (see column 12, lines 30-50).

Evans, Jr. teaches a multiple junction cell that can absorb light on both the front and back surfaces of the cell (see fig 1 and column 2, lines 5-25).

Therefore, it would be obvious to one of ordinary skill in the art to modify the solar cell taught by Gonsiorawski by using back contact cells such as the ones taught by Evans, Jr. because a back contact cell provides more absorber surface area, and therefore more energy conversion (see column 1, lines 30-35)

11. Claims 10 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsiorawski in view of Evans, Jr., and further in view of Green et al., U.S. Patent No. 5,080,725.

Gonsiorawski teaches a solar cell with a reflector as discussed above.

Gonsiorawski does not teach the manner of reflector used.

Green et al. teaches a solar cell module with a Lambertian reflector will be ideal because the Lambertian reflector reflects light with a random distribution, therefore

Art Unit: 1795

exposing the entire cell to light more uniformly (see fig. 14 and column 2, line 65 through column 3, line 2).

Therefore, it would be obvious to one of ordinary skill in the art to modify the module taught by Gonsiorawski by using the Lambertian reflector taught by Green et al. because a Lambertian reflector traps light in the system more successfully than other designs (see fig. 14), allowing more of the light to be absorbed by the active areas of the cells (see Gonsiorawski at column 10, lines 50-68).

12. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsiorawski as applied above, in view of Platz et al., U.S. Patent No. 6,731,351.

Claim 19 contains means plus function language, means to change, and is therefore interpreted under 35 U.S.C. 112, sixth paragraph. In this case, means to change is read to include a LCD or a computer with output signals (see paragraph 68).

Regarding Claims 16-18, Gonsiorawski teaches a solar cell as discussed above.

Gonsiorawski does not teach an electrically activatable feature, however Gonsiorawski does teach the use of its array in many energy generating situations.

Platz teaches using a photovoltaic cell connected to an LCD device, which is taught as an electrically activatable element that can be changed electronically in the present specification (see column 4, lines 25-40).

Therefore, it would be obvious to one of ordinary skill in the art to modify the photovoltaic array taught by Gonsiorawski by connecting it to a LCD device as taught by Platz because the solar cell facilitates the LCD device receiving light of optimal wavelength (see column 4, lines 25-40).

Regarding Claim 19, Platz teaches incorporating means to change the element electronically (see column 4, lines 25-40), because means to change electronically in interpreted, in view of the specification, to include the LCD itself (see paragraph 58).

13. Claims 21, 23, 27, 29, 30, 31, 34, 39, 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonsiorawski as applied above in view of Beppu et al., U.S. Patent No. 6,156,698.

Regarding Claims 21, 23, 39 and 44, Gonsiorawski teaches each solar cell comprising:

A semiconductor strip with a p-n junction formed by doping, which can be considered a p-type or an n-type dopant, a first surface, and a second side surface (see column 5, lines 55-60).

A first metal contact (see column 5, lines 55-65) in contact with the diffusion layer. Gonsiorawski teaches that the cell itself will have a first contact disposed on the p-n junction side of the device.

A second metal contact (see column 5, lines 55-65) isolated from the p-n junction;

The limitation semiconductor strip is read to include any semiconductor material. In the specification, Applicant does not limit the invention to any particular cells to be used, and the cells taught by Gonsiorawski can be considered a strip.

Gonsiorawski does not teach the p-n junction formed with a diffusion layer.

Beppu et al. teaches a silicon p-n junction solar cell with a semiconductor strip comprising a p-type dopant (44; see column 13, lines 15-30) and introducing a n-type

Art Unit: 1795

diffusion layer to create the p-n junction (see column 13, lines 15-30). Furthermore, Beppu et al. shows that the n-type diffusion layer exists both on at least a portion of the front surface and at least a portion of the side surface (see fig. 6).

Therefore, it would be obvious to one of ordinary skill in the art to modify the doped p-n junction solar cell taught by Gonsiorawski by using the silicon cell with the diffusion layer taught by Beppu et al. because Gonsiorawski contemplates p-n junction cells such as the ones taught by Beppu et al. (see column 12, lines 30-45) and the diffusion based solar cell taught by Beppu et al. can be manufactured to improve the compositional uniformity of the silicon semiconductor film (see column 1, lines 10-20).

Regarding Claims 27, 30 and 40 Gonsiorawski teaches a semiconductor strip with a p-n junction formed by doping, which can be considered a p-type or an n-type dopant, a first surface, and a second side surface (see column 5, lines 55-60).

Gonsiorawski further teaches a first metal contact (see column 5, lines 55-65) in contact with the diffusion layer. Gonsiorawski teaches that the cell itself will have a first contact disposed on the p-n junction side of the device;

And a second metal contact (see column 5, lines 55-65) isolated from the p-n junction;

Gonsiorawski does not teach the p-n junction formed with a diffusion layer.

Beppu et al. teaches a silicon p-n junction solar cell with a semiconductor strip comprising a p-type dopant (44; see column 13, lines 15-30) and introducing a n-type diffusion layer to create the p-n junction (see column 13, lines 15-30). Furthermore,

Art Unit: 1795

Beppu et al. shows that the n-type diffusion layer exists both on at least a portion of the front surface and at least a portion of the side surface (see fig. 6).

Therefore, it would be obvious to one of ordinary skill in the art to modify the doped p-n junction solar cell taught by Gonsiorawski by using the silicon cell with the diffusion layer taught by Beppu et al. because Gonsiorawski contemplates p-n junction cells such as the ones taught by Beppu et al. (see column 12, lines 30-45) and the diffusion based solar cell taught by Beppu et al. can be manufactured to improve the compositional uniformity of the silicon semiconductor film (see column 1, lines 10-20).

Claim 31 is a product by process claim as discussed above. As such, Claim 31 is anticipated under the rejection of Claim 29.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW T. MARTIN whose telephone number is (571)270-7871. The examiner can normally be reached on 8:30 to 5:00 EST Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Michener, can be reached on (571)272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW T MARTIN/
Examiner, Art Unit 1795
1 October 2009

/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795